What is claimed is:

1. A cathode ray tube (CRT) comprising:

a glass envelope having a rectangular faceplate panel and a tubular neck connected thereto by a funnel;

an electron gun positioned in the neck for directing electron beams toward the faceplate panel;

a yoke positioned in the neighborhood of the funnel-to-neck junction, the yoke having windings configured to apply a horizontal deflection yoke field and a vertical deflection yoke field to the beams;

at least one magnetic field sensor located near the glass envelope for sensing an ambient magnetic field environment of the CRT;

a controller receiving a signal from the magnetic field sensor;

register correction coils being mounted in the vicinity of the neck and being dynamically controlled by the controller to shift the beams; and,

multipole coils applied to the neck and having adjacent poles of alternating polarity such that the resultant magnetic field being dynamically controlled by the controller based on the magnetic field sensor signal moves outer ones of the beams to correct a misconvergence caused by the register correction.

2. The CRT of claim 1 wherein the multipole coils are quadrupole coils, the quadrupole coils comprise a set of vertical quadrupole coils being oriented at 45° from the CRT axes such that the resultant magnetic field being dynamically controlled by the controller based on the magnetic field sensor signal moves outer ones of the beams vertically to correct the misconvergence.

3. The CRT of claim 2 wherein the quadrupole coils further comprise a set of horizontal quadrupole coils being oriented on the CRT axes such that the resultant magnetic field being dynamically controlled by the controller based on the magnetic field sensor signal moves outer ones of the beams horizontally to correct the misconvergence.

4. The CRT of claim 3 wherein the horizontal deflection yoke field is substantially barrel shaped the vertical deflection yoke field is substantially pincushion shaped.

5. The CRT of claim 1 wherein the electron gun has electrostatic astigmatism correction.

6. The CRT of claim 5 wherein the quadrupole coils are located in the vicinity of a dynamic astigmatism point of the electron gun such that adjustment of an electrostatic astigmatism voltage has no affect on spot shape.

7. The CRT of claim 3 wherein the quadrupole coils and register correction coils are dynamically controlled by the controller to maintain simultaneous purity and convergence.

8. The CRT of claim 7 wherein the controller further comprises a register driver, a horizontal convergence driver and a vertical convergence driver.

9. The CRT of claim 8 wherein the register driver is coupled to the register correction coils, the horizontal convergence driver is coupled to the horizontal quadrupole coils and the vertical convergence driver is coupled to the vertical quadrupole coils.

10. A cathode ray tube (CRT) comprising:

a glass envelope having a rectangular faceplate panel and a tubular neck connected thereto by a funnel;

an electron gun positioned in the neck for directing electron beams toward the faceplate panel;

a yoke positioned in the neighborhood of the funnel-to-neck junction, the yoke having windings configured to apply a horizontal barrel shaped field and a vertical pincushion shaped field to the beams, the horizontal barrel field shape being adjusted to give an optimized spot shape at sides of the screen, causing an overconvergence of the beams at the sides of the screen;

at least one magnetic field sensor located near the glass envelope for sensing an ambient magnetic field environment of the CRT;

a controller receiving a signal from the magnetic field sensor;

register correction coils being mounted in the vicinity of the neck and being dynamically controlled by the controller to shift the beams; and,

quadrupole coils applied to the neck and having adjacent poles of alternating polarity such that the resultant magnetic field being dynamically controlled by the controller based on the magnetic field sensor signal moves outer ones of the beams to correct a misconvergence caused by the register correction coils, the

quadrupole coils also being dynamically controlled by the controller to correct overconvergence at the sides of the screen caused by the yoke.

11. The CRT of claim 10 wherein the quadrupole coils comprise a set of vertical quadrupole coils being oriented at 45° from the CRT axes such that the resultant magnetic field being dynamically controlled by the controller moves outer ones of the beams vertically to correct the misconvergence.

12. The CRT of claim 11 wherein the quadrupole coils further comprise a set of horizontal quadrupole coils being oriented on the CRT axes such that the resultant magnetic field being dynamically controlled by the controller moves outer ones of the beams horizontally to correct the misconvergence.

13. The CRT of claim 10 wherein the electron gun has electrostatic astigmatism correction.

14. The CRT of claim 13 wherein the quadrupole coils are located in the vicinity of a dynamic astigmatism point of the electron gun such that adjustment of an electrostatic astigmatism voltage has no affect on spot shape.

15. The CRT of claim 10 wherein the quadrupole coils and register correction coils are dynamically controlled by the controller to maintain simultaneous purity and convergence.

16. The CRT of claim 15 wherein the controller further comprises a register driver, a horizontal convergence driver and a vertical convergence driver.

17. The CRT of claim 16 wherein the register driver is coupled to the register correction coils, the horizontal convergence driver is coupled to the horizontal quadrupole coils and the vertical convergence driver is coupled to the vertical quadrupole coils.